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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,476	12/03/2003	Gabriele Nelles	450117-03372.1	5895

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EXAMINER	
DIAMOND, ALAN D	

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,476	NELLES ET AL.	
	Examiner	Art Unit	
	Alan Diamond	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,4,7,10-17,31 and 63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4,7,10-17,31 and 63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/866,199.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Comments

1. The objection to the disclosure for informalities has been overcome by Applicant's amendment of the specification.

Priority

2. This application filed under former 37 CFR 1.60 lacks the necessary reference to the prior application. A statement reading "This is a continuation of Application No. 09/866,199, filed 05/25/2001, now U.S. Patent 6,700,058." should be entered following the title of the invention or as the first sentence of the specification.

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 4, 7, 10-17, 31, and 63 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nakamura, U.S. Patent 6,291,763 B1.

Nakamura prepares a photo cell (i.e., instant solar cell) having the claimed components, wherein a molten salt or mixture of molten salts are used in a charge transporting layer (see abstract; col. 15, line 61 through col. 25, line 17; and Examples 1-3). The molten salts Y19, Y20, Y26, Y27, Y31, Y33, Y35, and Y36 in the table at cols. 18-25 are polymeric. It is the Examiner's position that said polymeric molten salts Y19, Y20, Y26, Y27, Y31, Y33, Y35, and Y36 exhibit a melting temperature lower than the operation temperature of the photo cell, such as about 140°C or less, since they are molten when used in the photo cell. Likewise, it is the Examiner's position that said molten salts Y19, Y20, Y26, Y27, Y31, Y33, Y35, and Y36 have a glass transition temperature, such as one of about 60°C or less, and are hole transporters. Solvent and iodine can be added to the instant molten salt, and said solvent or iodine reads on the instant dopant (see col. 25, lines 13-21). The semiconductor of the photocell can comprise nanoparticles of TiO_2 and be sensitized with a dye, such as a ruthenium complex (see col. 5, lines 1-14; col. 7, line 42 through col. 8, line 41; and Example 1 at col. 33). Since Nakamura teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

In addition, the presently claimed limitation that the polymeric electrically conducting agent has a melting temperature lower than the operation temperature of photoelectric conversion device and has a glass transition temperature would obviously

have been present once Nakamura's molten salt Y19, Y20, Y26, Y27, Y31, Y33, and Y35, or mixture thereof, is provided. Note In re Best, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 3, 4, 7, 10-14, and 31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,700,058. Although the conflicting claims are not identical, they are not patentably distinct from each other because it is the Examiner's position that the compounds in claims 1, 3, and 16 of said patent are polymers, have a melting temperature lower than the operation temperature of the photoelectric conversion device they are used in (claims 2 and 8 of said patent), and have a glass transition temperature. When the mixture is used as in claim 3 of said patent, any one of the two compounds is the dopant for the other compound. Note in claims 3 and 19 of said

patent that the semiconductor in the photoelectric conversion device is sensitized with a dye. A photoelectric conversion device clearly renders obvious a solar cell, as in instant claim 31.

8. Claims 15-17 and 63 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,700,058 in view of Nakamura (U.S. Patent 6,291,763).

It is the Examiner's position that the compounds in claims 1, 3, and 16 of said patent are polymers, have a melting temperature lower than the operation temperature of the photoelectric conversion device they are used in (claims 2 and 8 of said patent), and have a glass transition temperature. Note in claims 3 and 19 of said patent that the semiconductor in the photoelectric conversion device is sensitized with a dye. The claims of said patent teach the limitations of the instant claims, the difference being that the claims of said patent do not specifically teach that the dye is a ruthenium complex or that the semiconductor is porous and made of nanoparticles, such as TiO_2 nanoparticles. However, each of these features is well known and conventional in the art. Nakamura teaches that the semiconductor for its photocell can comprise nanoparticles of TiO_2 (i.e., it is porous) and be sensitized with a dye, such as a ruthenium complex (see col. 5, lines 1-14; col. 7, line 42 through col. 8, line 41; and Example 1 at col. 33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a ruthenium complex for the dye in the claims of said patent, and to have used a semiconductor that is porous and comprises

nanoparticles of TiO_2 because such features are well known and conventional in the art, as shown by Nakamura.

Response to Arguments

9. Applicant's arguments filed November 26, 2004 have been fully considered but they are not persuasive.

Applicant argues that Nakamura's salts Y19, Y20, Y26, Y27, Y31, Y33, and Y35 in the table at cols. 18-25 are not polymeric. Applicant argues that "[t]o someone skilled in the art, a polymer consists of a plurality of similar or identical low molecular weight building blocks, i.e., monomer", and that there are no such monomers in any of the salts cited by the Examiner. Applicant argues that "[i]f the Examiner believes that the salts of Nakamura are polymers, then the Examiner should be able to explain their alleged polymeric nature. Applicant argues that since the salts are not polymeric, they do not have a glass transition. However, these argument are not deemed to be persuasive because the repeat unit in the salts Y19, Y20, Y26, Y27, Y31, Y33, Y35, and Y36 is -CH_2CH_2O-. While it is acknowledges that many of said salts have only two -CH_2CH_2O- repeat units, it should be noted that diethylene glycol, itself, is considered to be a polymer. See col. 3, lines 57-62, of Priddy (U.S. Patent 4,288,379) and col. 4, line 64, of Klein (U.S. Patent 4,710,520) which teach that diethylene glycol is polymeric. It is the Examiner's position that said salts are polymeric and do have a glass transition temperature.

Applicant argues that "since Nakamura does not appear to explicitly mention anything concerning operation temperature of a photoelectric conversion device, we

cannot accept the Examiner's allegation that the feature 'a melting temperature which is lower than the operation temperature of said photoelectric conversion device' is obviously present in Nakamura." However, this argument is not deemed to be persuasive because Nakamura clearly teaches that "[t]he molten salt electrolyte is preferred for securing both photoelectric conversion efficiency and durability" (see col. 16, lines 6-7). Nakamura also teaches that the molten salts can be used with or without solvents (see col. 25, lines 13-14). It is the Examiner's position that Nakamura desires that when the molten salt is used in the photoelectric conversion device, it is molten, and secures both photoelectric conversion efficiency and durability. Since the salt is molten when used in the photoelectric conversion device, it must have a melting point temperature which is lower than the operation temperature of the photoelectric conversion device. If the melting point of the salt was above the operation temperature of the photoelectric conversion device, then the salt would not be molten in the device.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
February 11, 2005